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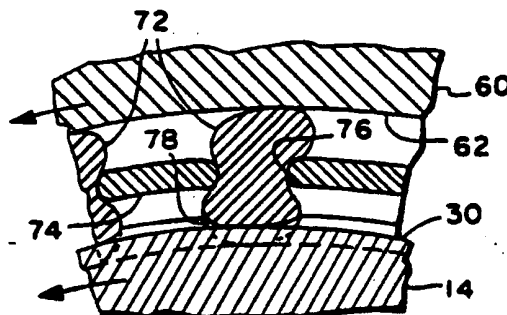
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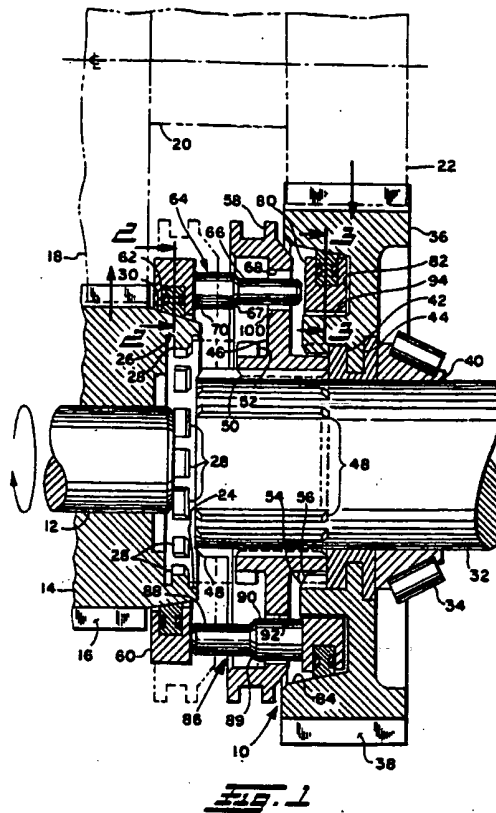
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08.01.92 Bulletin 92/02(84) Designated Contracting States:
DE ES FR GB IT NL SE(98) Date of deferred publication of the search report:
03.06.92 Bulletin 92/23(71) Applicant: **EATON CORPORATION**
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Hounslow Middlesex TW4 5DX(GB)(54) **Self-energizing synchronizer.**

(57) A synchronizer for a changeable ratio gear box of the pin type employing a friction cone (30) on the gear (14) to be engaged. The synchronizing ring (60) employs pins (64) positively drivingly engaging an axially movable dogged shifting clutch (46) splined to the output shaft (32) and axially engageable with the gear to be engaged. In one embodiment, the synchronizer ring has a plurality of sprag members (72) circumferentially spaced about the ring and pivoted thereon with the radially outer surface (78) thereof tapered to frictionally engage said friction cone upon axial force application to the ring by the shifting clutch such that the sprag members are pivoted by camming action to increase the friction forces and effect synchronization without increase in the axial force applied to the ring. In another embodiment the synchronizer ring has a plurality of sprag members circumferentially spaced within the ring and pivoted thereon with the radially inner surface thereon tapered to frictionally engage said friction cone upon axial force application to the ring by the shifting clutch such that the sprag members are pivoted by the camming action to increase the friction forces and effect synchronization without increase in the axial force applied to the ring.

**Fig. 2****EP 0 465 080 A3**



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EUROPEAN SEARCH REPORT

Application Number

EP 91 30 5705

| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|---|---|---|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl.5) |
| A | DE-A-1 775 192 (MEYERLE) * the whole document * --- | 1, 2, 4, 5, 7 | F16D23/04 F16D13/04 F16D23/06 |
| A | US-A-1 952 461 (ROOS) * the whole document * --- | 1, 2, 4-6, 8 | |
| A | FR-A-1 116 646 (RENAULT) * figures 1-3 * --- | 1, 2, 5, 7, 9 | |
| A | GB-A-1 035 664 (ZAHNRADFABRIK FRIEDRICHSHAFEN) --- | | |
| A | US-A-3 426 874 (JOHNSTON) ----- | | |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl.5) |
| | | | F16D F16H |
| The present search report has been drawn up for all claims | | | |
| Place of search BERLIN | | Date of completion of the search 25 MARCH 1992 | Examiner GERTIG I. |
| CATEGORY OF CITED DOCUMENTS | | | |
| X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document | | T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document | |

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